Trend Study 8B-9-00

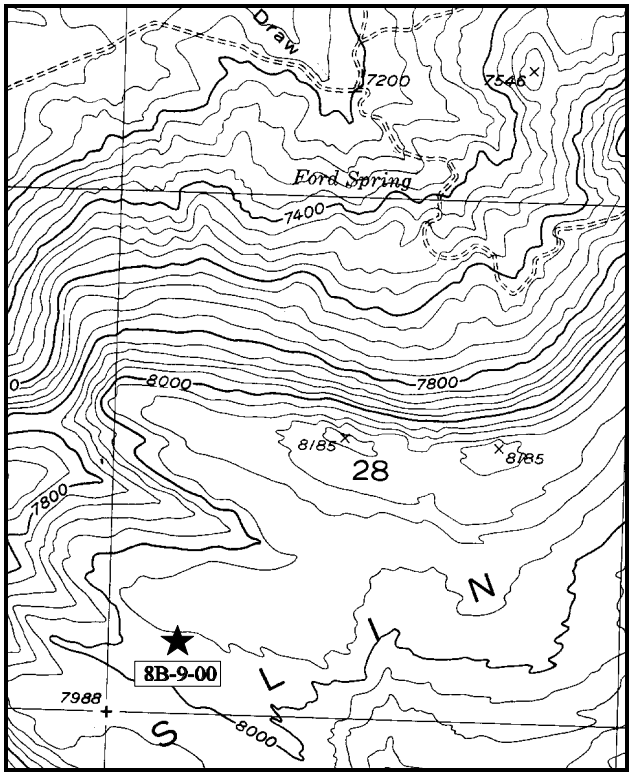
Study site name: West Goslin . Range type: Big Sagebrush-Grass .

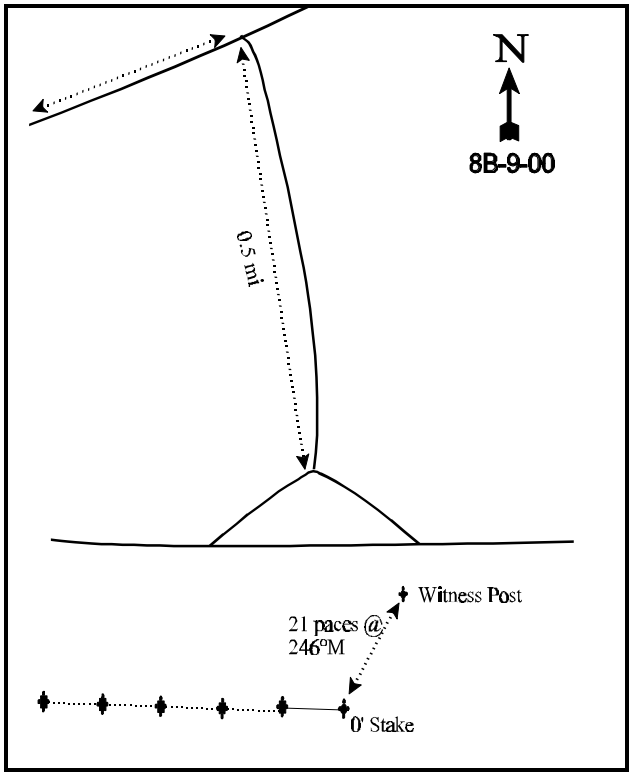
Compass bearing: frequency baseline 264°M .

First frame placement on frequency belts 5 feet. Frequency belt placement; line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

From Dutch John, proceed north towards Antelope Flat on Highway U.S. 191 for approximately 8 miles. Before the Wyoming border, turn east on the Antelope Flat Road towards Goslin Mountain. Go 2.8 miles and turn right towards Goslin Mountain. Turn right and drive 1.3 miles to a gate. Go through the gate and continue 2.5 miles to a fork. Go right 0.5 miles to a intersection. The witness post is locates on the east side of the Y shaped intersection about 50' south of the road. Full size posts are used to mark the site. The 0-foot post is marked with a browse tag # 34.





Map Name: Goslin Mtn. Diagrammatic Sketch

Township 3N , Range 23E ,Section 28 UTM 4535540.855 N, 640174.418 E

DISCUSSION

Trend Study No. 8B-9 (9-20)

Five new study sites were established in 1995 in the Goslin Mountain area to monitor key habitat used by both livestock and elk. The area is used for livestock during the summer. Two of the sites were placed in the mountain big sagebrush-grass type and the remaining three monitor meadows which receive concentrated use. This particular site, West Goslin, was placed on a ridge top at an elevation of 8,000 feet with a south-east aspect and gently slope (2% to 3%). An elk herd of about 30 individuals was encountered when setting up the study in early July of 1995. Elk pellet groups were found in 7% of the quadrats placed on the site in 1995, while deer pellet-groups were less common. A few cattle pats were also scattered through the area in small numbers, but none were encountered within a quadrat. Pellet group data from 2000 estimated 30 elk, 7 deer, and 4 cow days use/acre (104 edu/ha, 17 ddu/ha and 10 cdu/ha). Most of the deer and elk pellet groups were from spring use. All cattle pats were from last fall. Cows use this area for one month with 400 AUMs in June, July or August.

The soil is moderately deep and rocky. Effective rooting depth is restricted in some places as evidenced by the presence of black sagebrush. Average effective rooting depth on the site is estimated at nearly 14 inches. Soil texture is a sandy loam with a slightly acidic soil reaction (pH of 6.1). The surface soil horizon, down to about 4 to 5 inches, is relatively rock free with large gravel and rocks common further down. There are also a few large boulders on the soil surface. Phosphorus is limited at only 4.7 ppm where values less than 10 ppm can limit normal plant growth and development. Due to the abundant vegetation and litter cover, there is little bare ground exposed. Vegetation and litter cover are also very well dispersed (as indicated by the very high nested frequency values) further protecting the soil from erosion.

The key browse species on the site consists of a fairly dense stand of mountain big sagebrush. Total cover of sagebrush was almost 25% in 1995 and 24% in 2000. These relatively large sagebrush account for over 70% of the browse cover. Population density was estimated at 3,380 plants/acre in 1995 with 80% of the population consisting of large mature plants. Density in 2000 was estimated at 3,600 plants/acre. Use is mostly light but percent decadence has risen from 14% to 29%. Vigor is normal on most plants but some of the older mature sagebrush appeared chlorotic with 25% of the decadent plants classified as dying (vigor class 4). Reproduction is good however, with a biotic potential (# of seedlings) of 6% and 7% of the population consisting of young plants.

Other less abundant preferred species include a few scattered serviceberry and true mountain mahogany which are more heavily utilized than sagebrush. Additional browse species include a small number of black sagebrush, bitterbrush, and snowberry.

Due to the high elevation of this site (8,000 feet) and the apparent spring use by big game, the herbaceous understory is the key component on this site. The understory is diverse and abundant. Grasses and forbs combine to produce about 30% cover or nearly half of the vegetative cover. Several species are common but letterman needlegrass, mutton bluegrass, and onion grass are the most abundant.

Thirty-one species of forbs were encountered on the site in 1995 and on 23 in 2000 with drought. Silvery lupine is the dominate forb. It provided nearly 7% cover in both 1995 and 2000. Lupine currently (‘00) accounts for 54% of the forb cover. Other common forbs include: sulfur eriogonum, desert and longleaf phlox and hollyleaf clover. Preferred forbs include arrowleaf balsamroot, yellow Indian paintbrush, low penstemon, lambstongue and bluebell.

1995 APPARENT TREND ASSESSMENT

Due to the abundant vegetation and litter cover, little bare ground is found on the site. The high nested frequency values for vegetation and litter also suggest well dispersed cover. This, combined with the gentle terrain, limits erosion. Trend for soil appears stable at this time. The browse trend is stable. The population of mountain big sagebrush is healthy and vigorous with low numbers of seedlings and a moderate density of young to maintain the population. Percent decadence is moderately low at 14% and use is mostly light to moderate. The one negative aspect of the population is that one in seven plants are dead and 30% of the decadent plants are classified as dying. The herbaceous understory is abundant and diverse. There are several known increaser species on the site including Kentucky bluegrass, Columbia needlegrass, and letterman needlegrass. Combined, these species makeup only 40% of the grass cover with the more preferred grasses accounting for 60%. The forb component also contains some increaser species but the overall composition is good. Trend for grasses and forbs appears stable.

2000 TREND ASSESSMENT

Trend for soil is stable. There is abundant and well dispersed protective ground cover to prevent significant erosion. Trend for the key browse species, mountain big sagebrush, is also stable. Population density has remained similar and use is mostly light. Seedlings and young are moderately abundant but decadent plants have increased to 29% of the population. Drought conditions appear to be effecting the sagebrush, even at this elevation. About 3% of the mature plants were classified as chlorotic while 25% of the decadent sagebrush were classified as dying. However, there appears to be adequate seedling and young recruitment to maintain the population. Trend for the herbaceous understory is down slightly. Sum of nested frequency of perennial grasses has declined slightly while frequency of perennial forbs declined substantially.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --
Herd unit 08B, Study no: 9

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'95	'00	'95	'00	'95	'00
G	Agropyron dasystachyum	180	*116	55	45	.80	.96
G	Carex spp.	39	33	14	15	.56	.99
G	Dactylis glomerata	49	*-	13	-	.31	-
G	Festuca ovina	26	*17	12	7	.35	.28
G	Melica bulbosa	213	*80	60	32	4.51	1.95
G	Poa compressa	15	*-	7	-	.13	-
G	Poa fendleriana	43	*188	16	55	.86	3.37
G	Poa pratensis	13	*50	3	13	.06	1.43
G	Sitanion hystrix	28	34	13	14	.16	.61
G	Stipa columbiana	96	72	30	25	1.70	1.35
G	Stipa comata	16	*66	6	24	.13	1.90
G	Stipa lettermani	174	141	55	44	3.47	4.26
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		892	797	284	274	13.07	17.13
Total for Grasses		892	797	284	274	13.07	17.13
F	Agoseris glauca	151	*9	56	4	.90	.19
F	Allium spp.	86	*13	41	5	.42	.02
F	Antennaria rosea	4	-	1	-	.03	-
F	Arenaria congesta	16	16	6	8	.51	.11
F	Arabis drummondi	9	6	4	3	.02	.01
F	Astragalus convallarius	4	8	2	4	.18	.24
F	Astragalus spp.	8	4	2	1	.01	.15
F	Balsamorhiza sagittata	4	3	2	2	.01	.04
F	Castilleja flava	4	8	2	3	.03	.04
F	Collomia linearis (a)	169	*3	61	1	1.07	.00
F	Collinsia parviflora (a)	154	*5	49	2	.99	.01
F	Crepis acuminata	36	*8	14	4	.34	.07
F	Cymopterus longipes	11	16	5	7	.07	.06
F	Delphinium nuttallianum	18	*-	8	-	.04	-
F	Draba spp. (a)	2	-	1	-	.03	-
F	Erigeron eatonii	11	5	4	3	.02	.04
F	Eriogonum umbellatum	52	59	19	24	1.31	1.56
F	Heterotheca villosa	3	9	1	3	.00	.21
F	Hymenoxys spp.	2	-	1	-	.03	-
F	Lomatium triternatum	9	*-	3	-	.01	-
F	Lupinus argenteus	197	184	69	70	6.85	6.93

Type	Species	Nested Frequency '95	Nested Frequency '00	Quadrat Frequency '95	Quadrat Frequency '00	Average Cover % '95	Average Cover % '00
F	Mertensia fusiformis	3	-	1	-	.00	-
F	Penstemon humilis	9	*-	4	-	.04	-
F	Phlox austromontana	27	36	10	13	.56	1.34
F	Phlox longifolia	129	*47	51	19	1.36	.41
F	Polygonum douglasii (a)	69	*27	28	9	.19	.26
F	Senecio integerrimus	16	13	7	7	.09	.06
F	Sedum lanceolatum	9	11	3	3	.06	.09
F	Taraxacum officinale	58	*3	23	1	.21	.03
F	Trifolium gymnocarpon	75	59	29	22	.73	.96
F	Unknown forb-annual (a)	3	-	1	-	.00	-
Total for Annual Forbs		397	35	140	12	2.29	0.28
Total for Perennial Forbs		951	517	368	206	13.90	12.60
Total for Forbs		1348	552	508	218	16.19	12.88

* Indicates significant difference at % = 0.10

BROWSE TRENDS --
Herd unit 08B, Study no: 9

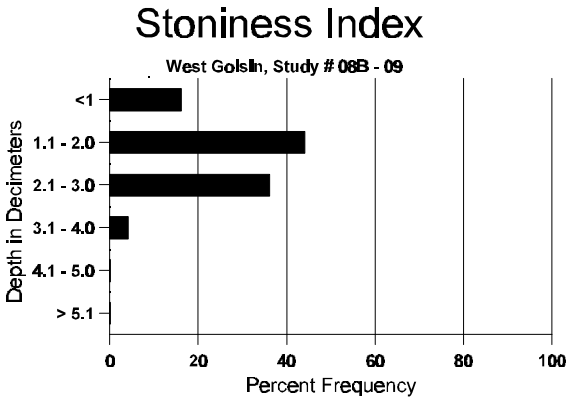
Type	Species	Strip Frequency '95	Strip Frequency '00	Average Cover % '95	Average Cover % '00
B	Amelanchier utahensis	7	4	.21	.18
B	Artemisia nova	4	0	.00	-
B	Artemisia tridentata vaseyana	82	87	24.90	23.68
B	Chrysothamnus viscidiflorus viscidiflorus	7	8	.53	.21
B	Eriogonum heracleoides	67	65	7.47	7.94
B	Gutierrezia sarothrae	2	0	.15	-
B	Purshia tridentata	1	1	-	.03
B	Symphoricarpos oreophilus	9	10	.96	1.19
Total for Browse		179	175	34.23	33.23

BASIC COVER --
Herd unit 08B, Study no: 9

Cover Type	Nested Frequency		Average Cover %	
	'95	'00	'95	'00
Vegetation	474	459	55.49	61.42
Rock	112	63	1.75	1.41
Pavement	52	79	.12	1.22
Litter	495	492	61.50	70.24
Cryptogams	22	1	.07	.00
Bare Ground	211	143	8.76	6.59

SOIL ANALYSIS DATA --
Herd Unit 8B, Study # 9, Study Name: West Goslin

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
13.48	59.4 (14.09)	6.1	64.0	21.4	14.6	3.0	4.7	134.4	0.6



PELLET GROUP FREQUENCY --
Herd unit 08B, Study no: 9

Type	Quadrat Frequency	
	'95	'00
Rabbit	-	3
Elk	7	7
Deer	3	4
Cattle	-	5

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
00	00
26	N/A
392	30 (74)
87	7 (17)
52	4 (11)

BROWSE CHARACTERISTICS --
Herd unit 08B, Study no: 9

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
Y	95	2	1	-	-	-	-	-	-	-	3	-	-	-	60			3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	95	6	1	-	-	1	1	-	-	-	9	-	-	-	180	27	41	9
	00	-	-	1	1	1	1	-	-	-	4	-	-	-	80	27	33	4
D	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'95	23%	08%	00%	-69%
'00	25%	50%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'95	260	Dec:		8%
'00	80			0%

Artemisia nova																		
M	95	-	2	1	-	-	-	-	-	-	3	-	-	-	60	6	9	3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	95	-	-	1	-	-	-	-	-	-	-	-	-	1	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'95	50%	50%	25%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'95	80	Dec:		25%
'00	0			0%

Artemisia tridentata vaseyana																		
S	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	10	-	-	-	-	-	-	-	-	10	-	-	-	200			10
Y	95	11	-	-	-	-	-	-	-	-	11	-	-	-	220			11
	00	12	-	-	-	-	-	-	-	-	12	-	-	-	240			12
M	95	92	39	4	-	-	-	-	-	-	135	-	-	-	2700	30	43	135
	00	107	7	1	1	-	-	-	-	-	113	-	3	-	2320	28	43	116
D	95	19	3	-	1	-	-	-	-	-	16	-	-	7	460			23
	00	45	6	1	-	-	-	-	-	-	39	-	-	13	1040			52
X	95	-	-	-	-	-	-	-	-	-	-	-	-	-	480			24
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	660			33

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'95	25%	02%	04%	+ 6%
'00	07%	01%	09%	

Total Plants/Acre (excluding Dead & Seedlings)				
'95	3380	Dec:		14%
'00	3600			29%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus montanus																		
M	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	68	84	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		'95	Moderate Use 00%		Heavy Use 00%		Poor Vigor 00%								%Change			
		'00	00%		00%		00%											
Total Plants/Acre (excluding Dead & Seedlings)													'95		0	Dec:		-
													'00		0			-
Chrysothamnus viscidiflorus viscidiflorus																		
Y	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	95	9	-	-	-	-	-	-	-	-	9	-	-	-	180	8	12	9
	00	9	-	-	-	-	-	-	-	-	9	-	-	-	180	9	14	9
D	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
% Plants Showing		'95	Moderate Use 00%		Heavy Use 00%		Poor Vigor 00%								%Change +23%			
		'00	00%		00%		00%											
Total Plants/Acre (excluding Dead & Seedlings)													'95		200	Dec:		0%
													'00		260			8%
Eriogonum heracleoides																		
Y	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	56	-	-	-	-	-	-	-	-	56	-	-	-	1120			56
M	95	242	-	-	28	-	-	-	-	-	270	-	-	-	5400	11	14	270
	00	252	-	-	-	-	-	10	-	-	262	-	-	-	5240	4	10	262
% Plants Showing		'95	Moderate Use 00%		Heavy Use 00%		Poor Vigor 00%								%Change +14%			
		'00	00%		00%		00%											
Total Plants/Acre (excluding Dead & Seedlings)													'95		5440	Dec:		-
													'00		6360			-
Gutierrezia sarothrae																		
M	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40	6	7	2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		'95	Moderate Use 00%		Heavy Use 00%		Poor Vigor 00%								%Change			
		'00	00%		00%		00%											
Total Plants/Acre (excluding Dead & Seedlings)													'95		40	Dec:		-
													'00		0			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
M	95	-	-	-	-	-	1	-	-	-	1	-	-	-	20	15	42	1
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60	16	28	3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'95	00%	100%	00%	+67%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'95	20	Dec:		-
'00	60			-

Symphoricarpos oreophilus																		
Y	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	95	7	7	-	3	-	-	-	-	-	17	-	-	-	340	24	47	17
	00	12	-	-	3	-	-	-	-	-	15	-	-	-	300	25	53	15

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'95	41%	00%	00%	- 6%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'95	340	Dec:		-
'00	320			-